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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,377

08/14/2006

Daniel J. Arriola

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EXAMINER

LENIHAN, JEFFREY S

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

12/16/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/589,377	ARRIOLA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeffrey Lenihan	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-8, 13, 15 and 24-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-12, 14, 16-23 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/21/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 1-8, 13, 15, and 24-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to either a nonelected invention (claims 1-8, 26) or a nonelected species (claims 13, 15, 24, 25), there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/21/2009.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 10/21/2009 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 with regards to cited references AH1 and AZ1 because US patents must be identified by the inventor in addition to the patent number and issue date. Similarly, reference CQ fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because publications must be identified by author. Regarding foreign references BO and BK, applicant did not provide an English abstract or statement of relevance. The cited references therefore have not been considered.

3. With regards to reference no. CR, the examiner notes that references CR and CB recite the same authors, the same journal, the same publication year/volume, and the same last page for the articles. It therefore appears that the recitation of different starting pages is a typographical error and that cited reference CR is merely a repetition of CB. Similarly, reference CT cites the same article as CG; reference CP cites the same article as CC; and reference CS cites the same article as CA.

***Claim Objections***

4. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 depends from claim 18 and recites values for the thermomechanical analysis penetration depth and flexural modulus of the claimed multi-block copolymer; however, these values are already recited in claim 18. Claim 19 therefore does not introduce any new limitations.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 10 recites the limitation "the interpolpolymer" in claim 9. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests replacing the term "interpolpolymer" with "multi-block copolymer."

8. Regarding claim 27: The examiner takes the position that the recitation of two inventions-the multi-block copolymer of the parent claim or a composition comprising the same-renders the claim indefinite, as claims are required to recite a single invention.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 9 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Turner et al, US5391629.

11. Example 8 of Turner (Column 10, lines 32-44) discloses a block copolymer comprising a first block which is an ethylene/propylene copolymer and a second block which is high density polyethylene (HDPE), corresponding to the claimed multi-block copolymer containing two blocks characterized by different comonomer contents (for claim 9). Turner discloses that the block copolymer may be used in the production of adhesives (for claim 27) (Column 7, lines 27-28).

12. Claims 9 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cozewith et al, US5798420, hereinafter Cozewith'420.

13. Example 1 of Cozewith'420 (Column 16, lines 8-38) discloses the formation of a block copolymer comprising a first block which is polyethylene and a second block which is an ethylene/propylene copolymer, corresponding to the claimed multi-block copolymer containing two blocks characterized by different comonomer contents (for claim 9). Cozewith'420 discloses that the block copolymer may be used in the production of adhesives (for claim 27) (Column 15, lines 48-53).

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14. Claims 9 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cozewith et al, US5733980, hereinafter Cozewith'980.

15. Examples 1A and 1B of Cozewith'980 (Column 15, line 65 to Column 16, line 17) disclose the formation of block copolymers comprising a first block which is polyethylene and a second block which is an ethylene/propylene copolymer, corresponding to the claimed multi-block copolymer containing two blocks characterized by different comonomer contents (for claim 9). Cozewith'980 discloses that the block copolymer may be used in the production of adhesives (for claim 27) (Column 15, line 49).

***Claim Rejections - 35 USC § 102/§ 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 12, 14, and 16-23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Turner et al, US5391629.

18. The block copolymer of Example 8 discussed above comprises a first block prepared from a monomer mixture comprising 56.5% by mole ethylene and a second block comprising only ethylene; the block copolymer therefore comprises greater than 50% by mole ethylene (for claim 16).

19. Turner is silent regarding the properties of tensile strength (claim 12), elongation at break (claim 12), storage modulus (ratio) (claims 14, 22, 23), compression set (claims

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14 and 16), melting point ( $T_m$ ) (claim 17), thermomechanical analysis penetration depth (claims 18, 19), flexural modulus (claims 18, 19), and abrasion resistance volume loss (claims 20-23).

20. Applicant recites that the multi-block copolymers of in the instant application are linear polymers comprising two or more distinct segments which are joined in a linear manner (spec. Page 10, line 29 to Page 11, line 2) which are characterized by a polydispersity index ( $M_w/M_n$ ) of anywhere in the range from 1.0 to 2.9 (page 11, lines 7-11). Said multi-block copolymers are characterized by a molecular weight ( $M_w$ ) in the range of 1000 to 5,000,000 g/mole (Page 72, lines 29-30), a glass transition temperature ( $T_g$ ) less than  $-25\text{ }^{\circ}\text{C}$  (Page 72, line 11), and comprise ethylene and one more comonomers wherein ethylene comprises a plurality of the polymerized units (Page 11, lines 12-19). Said comonomer may be propylene (Page 19, line 10).

21. As discussed above Example 8 of Turner is a block copolymer comprising propylene and a plurality of units derived from ethylene comprising two blocks that differ in terms of comonomer content; the prior art block copolymer is further characterized by  $M_w/M_n$  of 1.59, a  $M_w$  of 255900 (based on the reported  $M_n$  and  $M_w/M_n$ ), a  $T_g$  of  $-52.9\text{ }^{\circ}\text{C}$  (Column 10, lines 40-44). As the prior art block copolymer is reported to 1) be prepared from the same monomers used by applicant, 2) have the same structure as the claimed multi-block copolymer, and 3) is characterized by the same properties of molecular weight,  $M_w/M_n$ ,  $T_g$ , and ethylene content as the claimed multi-block copolymer, the examiner takes the position that the properties of the prior art polymer would necessarily be the same as claimed and inherently be not materially different from those

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of the claimed invention. As the PTO is not equipped to perform experiments, the burden is therefore shifted to applicant to provide evidence demonstrating that the properties used to define the claimed invention are not inherently present in the prior art block copolymer (for claims 12, 14, 16-23).

### ***Claim Rejections - 35 USC § 103***

22. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

23. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner et al, US5391629.

24. Turner discloses that the block copolymers may have a polydispersity index in the range of 5 or less (Column 7, lines 9-12), overlapping the claimed range (for claims 10, 11). Regarding the claimed properties of Tm/density relationship, heat of fusion, and delta quantity, the examiner takes the position that these limitations are inherently met by the block copolymer of Turner per the same rationale outlined in paragraph 23 of this Office Action. Applicant is therefore required to provide evidence demonstrating that the properties used to define the claimed invention are not inherently present in the prior art block copolymer (for claims 10, 11).



25. Claims 10-12, 14, and 16-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Cozewith et al, US5733980.

26. Example 1D of Cozewith'980 (Column 15, line 65 to Column 16, line 6) discloses an AB block copolymer wherein the A block comprises polyethylene and the B block comprises an ethylene/propylene/diene copolymer, corresponding to the claimed multi-block copolymer comprising two segments having different comonomer contents. Said block copolymer is characterized by  $M_w/M_n$  of 1.94 (for claims 10, 11) (Table 2), overall ethylene content of 70.8% (for claim 16) (Table 2), an  $M_w$  of 270000, and an extension at break of 1130% (for claim 12) (Table 3).

27. The block copolymer of Example 1D has a tensile strength of 10 MPa (Table 3) It has been held that a *prima facie* case of obviousness exists where the claimed ranges and the prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties, see *Titanium Metals Corp. of America v. Banner* 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). As the claimed range "above 10 MPa" reads on values only slightly greater than 10, the claimed range would therefore have been obvious to one of ordinary skill in the art at the time the invention was made in view of the block copolymer of Cozewith'980 (for claim 12).

28. Cozewith'980 is silent regarding the properties of storage modulus (ratio), compression set, melting point ( $T_m$ ), thermomechanical analysis penetration depth, flexural modulus, and abrasion resistance volume loss,  $T_m$ /density relationship, heat of fusion, and delta quantity; however, as discussed above, Cozewith'980 discloses a

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block copolymer having the same comonomer content, the same linear structure, and similar properties of  $M_w$ ,  $M_w/M_n$ , extension at break, tensile strength, etc. Per similar rationale as that outlined in paragraph 21 of this Office Action, the examiner takes the position that the properties of the prior art polymer would necessarily be the same as claimed and inherently be not materially different from those of the claimed invention. Applicant is therefore required to provide evidence demonstrating that the properties used to define the claimed invention are not inherently present in the prior art block copolymer (for claims 10-12, 14, 16-23).

29. Claims 10-12, 14, and 16-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Cozewith et al, US5798420.

30. As noted above, Example 1B of Cozewith'420 discloses an AB block copolymer wherein the A block comprises polyethylene and the B block comprises an ethylene/propylene/diene copolymer; said block copolymer is characterized by  $M_w/M_n$  of 1.7 (for claims 10, 11) (Table 1), overall ethylene content of 70.8% (for claim 16) (Table 1), a  $M_w$  of 246000, and an extension at break of 1220% (for claim 12) (Table 3).

31. The block copolymer of Example 1B has a tensile strength of 9.7 MPa (Table 3). Per the same rationale outlined in paragraph 27 of this Office Action, the claimed range would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the block copolymer of Cozewith'420 (for claim 12).

32. Cozewith'420 is silent regarding the properties of storage modulus (ratio), compression set, melting point ( $T_m$ ), thermomechanical analysis penetration depth,

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flexural modulus, and abrasion resistance volume loss,  $T_m$ /density relationship, heat of fusion, and delta quantity; however, as discussed above, Cozewith'420 discloses a block copolymer having the same comonomer content, the same linear structure, and similar properties of  $M_w$ ,  $M_w/M_n$ , extension at break, tensile strength, etc. Per similar rationale as that outlined in paragraph 21 of this Office Action, the examiner takes the position that the properties of the prior art polymer would necessarily be the same as claimed and inherently be not materially different from those of the claimed invention. Applicant is therefore required to provide evidence demonstrating that the properties used to define the claimed invention are not inherently present in the prior art block copolymer (for claims 10-12, 14, 16-23).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Lenihan whose telephone number is (571)270-5452. The examiner can normally be reached on Monday through Thursday from 7:30-5:00 PM, and on alternate Fridays from 7:30-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

/Jeffrey Lenihan/  
Examiner, Art Unit 1796

/JL/